

TCT-121

Thoracic Aortic Pseudoaneurysm Following Endovascular Stent Graft Placement for Treatment of Type B Dissection: What causes it?

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Background: To analyze early technical success and late clinical success after endovascular entry sealing for chronic type B dissection with special emphasis on the development of pseudoaneurysm, reintervention, false lumen and aortic remodeling.

Methods: Retrospective analysis of a prospective database. We observed 151 patients (mean age 62.2 ± 12.6 years, 67% male) in the period July 1999 to May 2010 with acute or chronic type B dissection treated by endovascular entry sealing. Serial contrast-enhanced computed tomography (CT) scans of 151 type B dissection patients (mean age 62.2 ± 12.6 years, 67% male) who underwent TEVAR were analyzed. True and false lumen diameter at baseline and follow-up were quantified. In 6 of 8 patients with pseudoaneurysm a complete follow-up by CT was available which was compared with the other 143 patients: The angle between distal stent ending and the further aorta in patients without and with pseudoaneurysm was measured.

Results: Eight of 151 patients developed a distal pseudoaneurysm after TEVAR. The incidence of development of pseudoaneurysm after TEVAR was 5.3 %. Seven patients were treated by distal extension of the stent graft, one denied reintervention. There was a significant difference in the angle between distal stent ending and the further aorta in patients without and with pseudoaneurysm ($167.1^\circ \pm 12.4$ vs. $148.2^\circ \pm 16.5$, $p < 0.05$). In mean a pseudoaneurysm was diagnosed after 22.5 months (3.2–115.2 months). By TEVAR an aortic remodeling was achieved with a significant gain of the true lumen (1.6 ± 0.8 cm vs. 2.9 ± 0.5 cm, $p < 0.001$).

Conclusions: Endovascular treatment in chronic type B dissection has a high technical success rate and low mortality. Pseudoaneurysm of the thoracic aorta following endovascular stent graft placement is a rare and potentially fatal condition.

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Endovascular Stent-Graft Implantation in Patients with Unstable Acute Intramural Hematoma: Is Endovascular Repair For Intramural Hematoma Over-Treatment or Suitable Treatment?

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Background: Endovascular aortic repair (EVAR) by using stent-graft is becoming one of the important therapeutic options for Stanford type B acute aortic syndrome. However, there is no valid or accepted indication of EVAR in Stanford type B intramural hematoma (IMH), even unstable features such as extra-aortic blood leak, refractory pain and very thick hematoma (>11 mm) with ulceration because of uncertain role of EVAR.

Methods: We reviewed 18 patients who underwent EVAR due to Stanford type B unstable IMH from January 2007 to December 2010. Indications of EVAR were extra-aortic blood leak, refractory pain despite medical therapy and very thick hematoma (>11 mm) with ulceration. Target points of stent-graft were definite point of extra-aortic blood leak, maximally thickened hematoma with or without ulceration lesions. Compared with baseline findings, we analyzed the changes in proximal and distal axial reference diameter, minimal and maximal axial diameter of lesion and maximal axial thickness of IMH at 12-month after EVAR by using multidetector computed tomography (MDCT). In follow-up MDCT, we defined $\geq 75\%$ reduction in maximal axial thickness of IMH after EVAR as good, from 26 to 74% as fair and $\leq 25\%$ as no reduction.

Results: Mean follow-up duration was 17.5 months and follow-up rate of MDCT was 94.4% ($n=17$). The incidence of each reduction criteria was good in 64.7% ($n=11$), fair in 29.4% ($n=5$) and no in 5.9% ($n=1$) respectively. Maximal axial diameter got smaller (mean $14.2 \pm 10.6\%$ decrement) and minimal axial diameter increased (mean $33.2 \pm 17.3\%$ increment) after EVAR.

Conclusions: EVAR promotes the reduction of main aortic pathologies through hematoma absorption. EVAR may assist not only appropriate positive remodeling but also negative remodeling in pathologic lesion of IMH. Although there is no approved or standard guideline, EVAR is an advantageous treatment to provide a good endurance against secondary structural weakening due to IMH.

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Initial Experience of Chimney Technique in Case of Aortic Arch Pathologies Involving the Supra-Aortic Branches

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Background: We present our initial clinical experience with chimney technique in the endovascular repair of aortic arch pathologies involving the supra-aortic branches. In case of thoracic endovascular aortic repair (TEVAR) it's very important to achieve adequate proximal zone, so the endoprosthesis often need to cover aortic arch branches. Chimney grafts have been proposed to preserve flow into over stented aortic branches during TEVAR.

Methods: Ten patients underwent TEVAR combined with a chimney graft implantation between January 2012 and June 2012. 6 patients were with aortic arch aneurysms and 4 patients with complicated type B dissection. In all cases chimney graft was implanted into the left subclavian artery. Mean length of follow up was up to 6 months.

Results: All chimney grafts were successfully implanted. In postoperative and follow up period no cases of endoleaks were found, there were no cases of paraplegia. No other postoperative aneurysm expansion has occurred and the chimney grafts remain patent. The overall 30-day mortality was 0%.

Conclusions: Chimney technique is promising option in case of urgent TEVAR in patients with an inadequate proximal neck and is a real alternative to fenestrated and branched endoprostheses.

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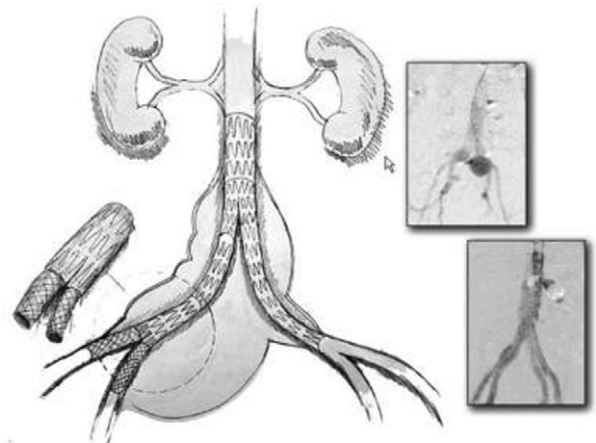
Endovascular Repair of Abdominal and Iliac Aneurysm Repair with Preservation of Pelvic Flow

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Background: Preservation of pelvic flow with an endovascular approach to common iliac aneurysms.

Methods: We constructed a bifurcated iliac limb by sewing a 12-mm and an 8-mm covered stent graft directly to a 20-mm stent graft limb, deployed ex-vivo. We left the distal ends of the 12-mm and 8-mm graft free to allow for more flexibility and greater ease of selection of the 8-mm internal iliac limb. Once the graft is re-sheathed via spiral wire technique, it is inserted, orientated, positioned 3–4cm above the ostium of the internal iliac, then deployed. With the main retrograde wire passing through the 12-mm graft, and the free 8-mm limb was then accessed from an arm approach. Angiograms and measurements are made and a covered self-expanding stent graft is deployed. The 12-mm limb is used to extend the graft into the external iliac, completing exclusion of the common iliac aneurysm, with preservation of both the internal and external iliac arteries.



Results: Thus far, we have performed this procedure on five patients since April 2011, and all have done extremely well. All have been men, who have been able to maintain appropriate exercise tolerance and remain free from erectile dysfunction.

Conclusions: Bifurcated limb stent grafts appear to be a viable endovascular treatment for large common iliac aneurysm, while maintaining good pelvic blood flow and all the advantages ensuing.

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A Novel Antimicrobial-Bonded Aortic Graft for Aortic Graft Infection

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Background: Vascular aortic infection is a serious complication after arterial surgery. We hypothesize that bonding 3 antimicrobial agents to aortic grafts would prevent/minimize perioperative vascular graft infections in a pig model for at least 6 months postoperatively.

Methods: In the pilot study, vascular Dacron grafts, 6 mm in diameter, were surgically implanted in the infrarenal portion of the abdominal aorta of 6 Sinclair Miniature swine. Two pigs received a graft that had been bonded with 60 mg/mL solutions of rifampin and minocycline; the other 4 pigs received unbonded grafts. Before implantation, the 2 bonded grafts and 2 of the 4 unbonded grafts were immersed in 2 mL of a bacterial solution containing 1 to 2×10^7 colony-forming units (CFU)/mL of *S. aureus* (ATCC 29213) for 15 minutes. Two weeks after graft implantation, the pigs were sacrificed and the grafts were surgically excised for study. Clinical, microbiological, and histopathologic data were